

15. (New) A process according to Claim 1 wherein the hydroxy-functional polydiorganosiloxane is mixed with up to 75% by weight based on the hydroxy-functional polydiorganosiloxane of a trialkylsilyl-terminated polydiorganosiloxane.

REMARKS

Claim Rejections -35 USC § 112

Through the present amendment Applicants have cancelled Claims 2, 3, 5, and 6 and have added new Claims 7-15. Support for the new Claims is found in the specification as originally drafted and in Claims 1-20 as previously presented in the PCT application. Therefore Claims 1, 4, and 7-15 are currently pending before the Examiner.

The Examiner has rejected Claims 1-3 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner states that Claim 1 is indefinite for "adding to the process". The Examiner explains that since it is expected that an anti-foam composition be added to the fermenting medium and not to the "process", it is not clear what is meant by the phrase. It is unclear what the applicant regards as the invention.

Applicants have amended Claim 1 to recite "A process for controlling foaming during an aqueous fermentation process, comprising adding to the aqueous fermenting liquor (i) a hydroxy-functional polydiorganosiloxane having a viscosity of 10-150 mPa.s at 25 °C containing no solid particles, and (ii) a polyglycol with which the hydroxy-functional polydiorganosiloxane is miscible." Applicants have added the description of the fermenting medium to Claim 1 as suggested by the Examiner. Applicants believe that amendment to Claim 1 overcomes the rejection of the Examiner. Applicants respectfully request that the Examiner withdraw this rejection.

Claim Rejections -35 USC § 102

The Examiner has rejected Claims 1 and 4 under 35 U.S.C. 102(b) as being anticipated by Gossn (FR 2 508 471; Examiner's translation, hereinafter R1). The Examiner states that R1 discloses an anti-foam composition comprising essentially a polydimethylsiloxane, *a silica*, a polyoxypropylene, a non-ionic surfactant and a dispersing agent. The Examiner also states that R1 discloses that the *silica component* is preferably a precipitated silica, a silica gel, fumed silica or a silica which has been treated to carry organosilyl groups (page 7, lines 20-23).

Applicants have amended Claim 1 to recite "A process for controlling foaming during an aqueous fermentation process, comprising adding to the aqueous fermenting liquor (i) a hydroxy-functional polydiorganosiloxane having a viscosity of 10-150 mPa.s at 25 °C containing **no solid particles**, and (ii) a polyglycol with which the hydroxy-functional polydiorganosiloxane is miscible."

Applicants believe the amendment of Claim 1 overcomes the rejection of the Examiner. Nowhere in R1 is component (i) of the present invention, the hydroxy-functional polydiorganosiloxane having a viscosity of 10-150 mPa.s at 25 °C containing **no solid particles** disclosed. For a reference to be anticipated, each and every element of the claim is required to be disclosed in a single reference. R1 fails to disclose component (i) as recited in Claim 1 as amended. Nowhere in R1 is it disclosed that their hydroxy-functional polydiorganosiloxane contains no solid particles. R1 in fact discloses that the silica component is required in their antifoam composition. Therefore, the applicants request that the rejection under 35 U.S.C. §102(b) be withdrawn and the claims allowed to issue.

Claim Rejections -35 USC § 103

The Examiner has rejected Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gossn (FR 2 508 471; Examiner's translation, hereinafter R1) in view of Raleigh et al. (US 5,451,692; hereinafter R2). The Examiner states that the disclosure by R1 is hereby incorporated by reference as outlined in paragraphs 2-8 above. The Examiner admits that

R1 is silent regarding incorporation of a hydrocarbon oil or vegetable oil in the anti-foam composition. The Examiner states that R2 discloses the use of silicone polyether alkyl copolymers as emulsifiers in water in oil emulsions (Abstract). The Examiner also states that R2 teaches of making water in oil emulsions comprising an oily phase, a discontinuous phase (water or alcohols) and the polyether alkyl copolymer as an emulsifier (col. 6, lines 35-43) for improved stability (Col.2, line 30) and that the oily phase can be paraffinic hydrocarbon liquids, mineral oils and petrolatum. (Col. 6, lines 44-46). The Examiner then concludes that given that R2 is employing mineral oil as the oily phase of a water in oil emulsion, and given that mineral oils are also known to exert anti-foaming property when applied in aqueous systems, that it would have been obvious to employ mineral oil as an emulsion forming component as taught by R2 or as an anti-foam component to complement the teachings of R1.

Claims 2 and 5 have been cancelled by the present amendment. Therefore the discussion below pertains to newly added Claim 11.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or teaching, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure MPEP §2143.

As stated above, Nowhere in R1 is component (i) of the present invention, the hydroxy-functional polydiorganosiloxane having a viscosity of 10-150 mPa.s at 25 °C containing **no solid particles** disclosed nor is it fairly suggested within the four corners of R1. R1 fails to disclose or teach component (i) as recited in Claim 1 as amended. Nowhere in R1 is it disclosed that the hydroxy-functional polydiorganosiloxane of R1 contains no solid particles. R1 in fact discloses that the silica component is required in their antifoam composition. A prior art reference that

“teaches away” from the claimed invention is a significant factor to be considered in determining obviousness MPEP §2145 (X)(D). It is improper to combine references where the references teach away from their combination MPEP §2145 (X)(D). There is no evidence or suggestion in R1 of an antifoam composition containing a hydroxy-functional polydiorganosiloxane having a viscosity of 10-150 mPa.s at 25 °C containing **no solid particles** as currently recited Claim 1 and claims depending therefrom.

As admitted above by the Examiner, R1 is silent regarding incorporation of a hydrocarbon oil or vegetable oil in the anti-foam composition. Nowhere in the disclosure of R1 is there any suggestion or teaching of incorporating any type of oil into their antifoam composition. Thus one skilled in the art looking at the disclosure of R1 would have no incentive to search the art for a disclosure which teaches an emulsion composition containing an oil. R2 does not in fact disclose or teach that their compositions have antifoaming properties, so R2 is in a non-analogous art which makes it even less likely that one skilled in the art would be incentivized to search the art, find the R2 reference, and combine it with the R1 reference.

Furthermore, even if R1 and R2 are combined the instant invention as defined in the claims as amended is not disclosed or taught. Therefore applicants conclude that an artisan having common sense at the time of the invention would not have reasonably considered “A process for controlling foaming during an aqueous fermentation process, comprising adding **to the aqueous fermenting liquor** (i) a hydroxy-functional polydiorganosiloxane having a viscosity of 10-150 mPa.s at 25 °C containing no solid particles, and (ii) a polyglycol with which the hydroxy-functional polydiorganosiloxane (i) and polyglycol (ii) are added initially to the aqueous fermenting liquor and an organic oil composition based on a hydrocarbon oil or vegetable oil is subsequently added to control foaming” as currently claimed in Claim 11.

Therefore, the applicants request that the rejection under 35 U.S.C. §103 be withdrawn and the claims allowed to issue.

The Examiner has rejected Claims 3 and 6 under 35 U.S.C. 103(a) as being unpatentable over Gossn (FR 2 508 471; Examiner's translation, hereinafter R1) in view of FR 2 111 310 (Examiner's translation; hereinafter R3). The Examiner admits that R1 is silent regarding the use of trialkylsilyl-terminated polydiorganosiloxane in the anti-foaming composition.

R3 discloses anti-foaming agents containing siloxanes (page 1, lines 1-3). The Examiner states that R3 discloses that the polydimethylsiloxane chains ends can be blocked or open (page 1, lines 28-29) and that the end group could be hydroxyl group or advantageously it could be triorganosilyl groups, for example trimethylsilyl etc. (page 1, lines 29-33). The Examiner further states that R3 teaches using polydimethylsiloxanes with trimethylsilyl terminal groups (page 3, lines 12-14) and that R3 discloses that these compositions can be used in various applications or one can use them in the form of aqueous emulsions or dispersions in solvents (page 2, lines 36-39). The Examiner therefore concludes that it would have been obvious to one of ordinary skill in the art, at the time the invention was made to add to the process a polydimethylsiloxane with trimethyl -silyl terminal group. One would do so to enhance the anti-foaming properties of the compositions. That it would have been obvious to one of ordinary skill in the art, at the time the invention was made to use the anti-foaming composition as taught by R1 and to add polydimethylsiloxanes with trimethylsilyl terminal groups, as taught by R3. Absent any evidence to contrary and based on the combined teachings of the cited references, there would be a reasonable expectation of success in formulating an anti-foaming composition.

Claims 3 and 6 have been cancelled by the present amendment. Thus the discussion below pertains to newly added Claim 15.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or teaching, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable

expectation of success must both be found in the prior art, not in applicant's disclosure MPEP §2143.

As stated above, Nowhere in R1 is component (i) of the present invention, the hydroxy-functional polydiorganosiloxane having a viscosity of 10-150 mPa.s at 25 °C containing **no solid particles** disclosed nor is it fairly suggested within the four corners of R1. R1 fails to disclose or teach component (i) as recited in Claim 1 as amended. Nowhere in R1 is it disclosed that the hydroxy-functional polydiorganosiloxane of R1 contains no solid particles. R1 in fact discloses that the silica component is required in their antifoam composition. A prior art reference that "teaches away" from the claimed invention is a significant factor to be considered in determining obviousness MPEP §2145 (X)(D). It is improper to combine references where the references teach away from their combination MPEP §2145 (X)(D). There is no evidence or suggestion in R1 of an antifoam composition containing a hydroxy-functional polydiorganosiloxane having a viscosity of 10-150 mPa.s at 25 °C containing **no solid particles** as currently recited Claim 1 and claims depending therefrom.

As admitted above by the Examiner, R1 is silent regarding incorporation of a polydimethylsiloxane having trimethylsilyl terminal groups in their anti-foam composition. Nowhere in the disclosure of R1 is there any suggestion or teaching of incorporating of a polydimethylsiloxane having trimethylsilyl terminal groups into their antifoam composition. Thus one skilled in the art looking at the disclosure of R1 would have no incentive to search the art for a disclosure which teaches an emulsion composition containing a polydimethylsiloxane having trimethylsilyl terminal groups. R3 does not in fact disclose or teach that their compositions have antifoaming properties, so R3 is in a non-analogous art which makes it even less likely that one skilled in the art would be incentivized to search the art, find the R3 reference, and combine it with the R1 reference.

Furthermore, even if R1 and R3 are combined the instant invention as defined in the claims as amended is not disclosed or taught. Therefore applicants conclude that an artisan having common sense at the time of the invention would not have reasonably considered "A

process for controlling foaming during an aqueous fermentation process, comprising adding to the aqueous fermenting liquor (i) a hydroxy-functional polydiorganosiloxane having a viscosity of 10-150 mPa.s at 25 °C containing no solid particles, and (ii) a polyglycol with which the hydroxy-functional polydiorganosiloxane is miscible” and “wherein the hydroxy-functional polydiorganosiloxane is mixed with up to 75% by weight based on the hydroxy-functional polydiorganosiloxane of a trialkylsilyl-terminated polydiorganosiloxane” as currently claimed in Claim 15.

Therefore, the applicants request that the rejection under 35 U.S.C. §103 be withdrawn and the claims allowed to issue.

This reply is being submitted within the period for response to the outstanding office action. Although the applicants believe in good faith that no extensions of time are needed, the applicants hereby petition for any necessary extensions of time. You are authorized to charge deposit account 04-1520 for any fees necessary to maintain the pendency of this application. You are authorized to make any additional copies of this sheet needed to accomplish the purposes provided for herein and to charge any fee for such copies to deposit account 04-1520.

Respectfully Submitted,
Dow Corning Corporation

/Timothy J. Troy/

Timothy J. Troy
Reg. No. 36,951
Tel: 989-496-5533